Krittiya Pa-im 2012: Torque Control of Auto-Screwdriver Machine by Neural Network. Mater of Engineering (Mechanical Engineering), Major Field: Mechanical Engineering, Department of Mechanical Engineering. Thesis Advisor: Mr. Chaiyakron Chansuwan, Ph.D. 130 pages.

This research presents an application of the principles and the theory of neural networks in torque control of the screw for the Auto-Screwdriver Machine. The neural network consists of two parts: Neural Network Identification and Neural Network Control. The concept of artificial neural network model for the reverse and learning to adjust the weights and the bias of network for the output of the model close to the target. The learning of neural network identification is 20 nodes and the learning of neural networks control are 14 nodes for the minimize mean square error. The transfer function of the neural network hidden layer and output layer transfer function is log-sigmoid and linear, respectively. The mean square error of the learning process of identification is 0.3963 Nm and the mean error square of the learning process of the controller is 0.0183 Nm. The testing control system, which the neural network both using the error value between the reference signal with the output equal to -0.009 Nm, which is in the control limit.

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